Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JIANG BIAN

Appeal No. 1999-1679
Application No. 08/851,742

HEARD: JULY 11, 2002

Before OWENS, LIEBERMAN, and PAWLIKOWSKI, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to allow claims 1 through 20, 22 and 23, which are all the claims pending in this application. Claim 21 has been canceled.

THE INVENTION

The invention is directed to a process for the manufacture of polyethylene homopolymers or copolymers of ethylene containing at least 90 mol.% of ethylene. It is

required that the initial preparation of the polymerization catalyst be in the absence of an electron donor. Subsequent to the first step of catalytic preparation an electron donor is utilized provided that electron donors which are alcohols, phenols, silanes and polysiloxanes are excluded from among those utilized in the preparation of said polymerization catalysts. Additional limitations are described in the following illustrative claim.

THE CLAIM

Claim 1 is illustrative of appellant's invention and is reproduced below:

1. A process for the manufacture of ethylene homopolymers and copolymers containing at least 90 mol% of ethylene, according to which ethylene in a polymerization medium is placed in contact with a catalytic system comprising:

a) a solid catalytic complex based on magnesium, on transition metal and on halogen, the said catalytic complex being prepared by reacting, in a first step, in the absence of an electron donor, at least one magnesium compound chosen from oxygen-containing organic magnesium compounds and halogen-containing magnesium compounds with at least one compound of a transition metal from group IVB or VB of the Periodic Table chosen from oxygen-containing organic compounds and halogen-containing compounds of a transition metal, until a liquid complex is obtained, and, in a subsequent step, by precipitating the said liquid complex using a halogen-containing organoaluminum compound of general formula $A1R_nX_{3-n}$ in which R is a hydrocarbon radical, X is a halogen and n is less than 3, in order to collect a solid catalytic complex,

b) an organometallic compound of a metal from groups IA, IIA, IIB, IIIA and IVA of the Periodic Table, and

c) at least one electron donor selected from the group consisting of organic compounds containing at least one atom or at least one group of atoms having at least one pair of free electrons, with the exception of alcohols, phenols, silanes, and polysiloxanes, said at least one

electron donor used after the first step in the preparation of a liquid complex leading to the solid catalytic complex.

THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references:

Zucchini et al. (Zucchini)	4,305,840	Dec. 15, 1981
Cowan et al. (Cowan)	4,588,703	May 13, 1986
Collomb-Ceccarini et al. (Collomb-Ceccarini)	4,921,920	May 1, 1990
Job	5,122,494	Jun. 16, 1992
Cuffiana et al. (Cuffiana)	5,278,118	Jan. 11, 1994
Scata et al. (Scata) (published Great Britain Patent Application)	1 539 175	Jan. 31, 1979

THE REJECTIONS

Claims 1, 3, 5 through 18, 20, 22 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Scata in view of Job.

Claims 1 through 8, 10 through 20, 22 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cuffiana in view of Zucchini, Cowan and Collomb-Ceccarini.

OPINION

We have carefully considered all of the arguments advanced by the appellant and the examiner, and agree with the appellant that the rejections of each of the claims are not well founded. Accordingly, we reverse these rejections.

The Rejection Under Section 103(a)

"[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." See In re Oetiker, 977

F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The Rejection Over Scata in View of Job

It is the examiner's position that,

> [i]t would be obvious to use the process of Scata to homopolymerize ethylene or for the copolymerization of ethylene and alpha-olefins to form copolymers having at least 90 mole percent ethylene because (1) any Ziegler-type catalyst that will polymerize alpha-olefins of 3 carbon atoms or more will inherently polymerize ethylene, (2) the catalyst of Scata is described as forming copolymers of ethylene and alpha-olefins i.e., it obviously can polymerize ethylene, (3) Job teaches that another high activity magnesium halide supported titanium containing Ziegler-type catalyst containing an electron donor may be used to homopolymerize ethylene or propylene (column 2, line 63 to column 3, line 16, lines 28-31; column 6, lines 9-34) and (4) one of ordinary skill in the art would believe that the catalyst of Scata would be suitable for polymerizing ethylene under the claimed conditions.

See Answer, pages 3 and 4. We disagree.

We find that Scata states that, "[t]he invention relates to the polymerisation of alpha-olefins having at least three carbon atoms, using catalysts containing titanium magnesium, aluminum and halogen." See page 1, left-hand column, lines 10-14. We further find that Scata discloses that, "[t]he alpha-olefins polymerized include propylene, butene-1 and 4-methylpentene-1. Propylene and higher olefins may be copolymerized with one another and/or with lower amounts of ethylene." See page 2, right-hand column, lines 83-87. We conclude that there is no suggestion or motivation to homopolymerize ethylene or form a copolymer of ethylene having at least 90 mol.% ethylene based on the teachings of Scata.

In contrast, Job is directed to the production of polymers and copolymers of lower

alpha-olefins, particularly propylene and ethylene. See column 1, lines 11-12. We find however, that the olefin polymerization catalyst is prepared by contacting the solid reaction product of a magnesium alkoxide, a titanium tetraalkoxide and a phenolic compound. See column 2, lines 65-66 column 3,lines 14-19, 34-37, 59-61, column 4, lines 8-10, 21-23 and 30-33. We conclude therefrom that a phenolic compound is required in the formation of the polymerization catalyst, which phenolic compound is precluded from the claimed subject matter. Accordingly, it would have been improper for the person of ordinary skill in the art to have combined the teachings of Job with Scata to suggest to one of ordinary skill in the art to homopolymerize ethylene or copolymerize at least 90 mol. % ethylene using the disclosure of Scata, when the claimed subject matter precludes both the presence of any electron donor in the initial formation of the catalyst and the presence of a phenol at any step of the preparation of a catalyst.

Based upon the above findings and analysis, we conclude that the examiner has failed to establish a prima facie case of obviousness. In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references").

The Rejection Over Cuffiana in view of Zucchini, Cowan and Collomb-Ceccarini

The reference to Cuffiana is directed to a catalytic system capable of producing

olefinic elastomers. See column 1, lines 41-49. The copolymers produced are copolymers of ethylene with alpha olefins or copolymers of ethylene alpha olefins and at least one diene. See claim 1. We find that the proportion of bonded propylene exemplified ranges from 35.2%, Example 13 to 55%, Example 11. We determine that there is no suggestion or teaching that ethylene may be homopolymerized or copolymerized utilizing at least 90 mol.% ethylene as required by the claimed subject matter. This is in accord with the examiners conclusion. See Answer, page 7.

As with the prior rejection, it is the examiner's position that, "it would be obvious to use the catalyst of Cuffiana to form the claimed ethylene polymers because it is well known in this art that Ziegler-type catalysts having a titanium-magnesium-halogen solid component and an aluminum alkyl activator normally may be used to form ethylene elastomers or the claimed ethylene homo or copolymers." See Answer, paragraph bridging pages 7 and 8. We again disagree. The evidence submitted by the examiner fails to support this conclusion.

Collomb-Ceccarini is directed to the production of polyolefins by polymerization or copolymerization of alpha-olefins. See column 1, lines 10-12. The alpha olefins comprise 2 to 8 carbon atoms. See column 3, lines 17-19. The examiner however has offered no reason to combine this reference with Cuffiana. To the contrary, the examiner has explicitly stated that, "Collomb-Ceccarini . . . is not really needed in this rejection." See Answer, page 9.

Zucchini is relied upon only for its disclosure of ethyl benzoate as an electron donor. See Answer, page 8. Zucchini however, is likewise directed to copolymers having only minor amounts of ethylene. See column 3, lines 18-32.

Furthermore, the examiner relies upon Cowan to disclose ethyl benzoate, appellant's preferred electron donor, but admits that Cowan, "does use an alcohol during the reaction of the magnesium chloride and titanium alkoxides." See Answer, page 8. Based upon the above findings, we conclude on this record that the examiner has failed to establish a prima facie case of obviousness with respect to the claimed subject matter.

Based upon the above analysis, we have determined that the examiner's legal conclusion of obviousness is not supported by the facts. "Where the legal conclusion [of obviousness] is not supported by [the] facts[,] it cannot stand." In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968), reh'g denied, 390 U.S. 1000 (1968).

DECISION

The rejection of claims 1, 3, 5 through 18, 20, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Scata in view of Job is reversed.

The rejection of claims 1 through 8, 10 through 20, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Cuffiana in view of Zucchini, Cowan and Collomb-Ceccarini is reversed.

The decision of the examiner is reversed.

REVERSED

TERRY J. OWENS Administrative Patent Judge	)	
PAUL LIEBERMAN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
BEVERLY A. PAWLIKOWSKI Administrative Patent Judge	)	

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